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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,305	07/24/2003	Takeshi Uemura	42479-3317	1942

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EXAMINER

WALLENHORST, MAUREEN

ART UNIT PAPER NUMBER

1743

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,305

Applicant(s)

UEMURA ET AL.

Examiner

Maureen M. Wallenhorst

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/328,684.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/24/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. Applicants are notified that the pending claims filed in the preliminary amendment dated July 24, 2003 have been renumbered as claims 27-35 since the original application had claims 1-26 in it, and the preliminary amendment canceled all of the original claims.

2. Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/328,684, filed on June 9, 1999. 3. The disclosure is objected to because of the following informalities: On

page 1 of the specification, the first sentence after the title of the invention should be changed to

—This is a continuation application of U.S. application serial no. 09/328,684, filed on June 9, 1999, now U.S. patent no. 6,627,155, issued on September 30, 2003—in order to update the status of the parent application.

Appropriate correction is required.

4. Claims 27-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On line 6 of claims 27, the phrase “the heating member” lacks antecedent basis. See this same problem on line 2 of claim 28. On lines 9-10 and 11 of claim 27, the phrase “the gas output” lacks antecedent basis. On line 14 of claim 27, the phrase “the sampling section” should be changed to —the sample section means—in order to use the same terminology used earlier in the claim.

On line 4 of claim 29, the phrase “the sample” lacks antecedent basis, and should be changed to —the specimen—so as to use the same terminology recited in the preamble of the

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claim. On line 15 of claim 29, the phrase "the sampling section" should be changed to –the sampling section means—so as to use the same terminology used on line 13 of claim 29.

On lines 2 and 4 of claim 32, the phrase "the heating member" lacks antecedent basis.

On line 3 of claim 32, the phrase "the combustion gas" lacks antecedent basis.

On lines 2-3 of claim 33, the phrase "the steel sample" should be changed to –the steel specimen--.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 27-35 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 3-9 of U.S. Patent No. 6,627,155.

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Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims recite a system for analyzing elements in a sample such as steel comprising a combustion member that is one of a high-frequency heating furnace or an electric resistance furnace for receiving the sample, a source of oxygen gas connected to the combustion member to supply oxygen gas to the combustion member as the sample is heated to gasify elements in the sample, a sample section connected to the combustion member by an exhaust conduit, a dust filter unit connected to the exhaust conduit for removing dust, an oxidizing device connected to the exhaust conduit for oxidizing the gas output of the combustion member, a dehumidifier for dehumidifying the gasified elements, a mass spectrometer, a conduit connecting the sample section to the mass spectrometer whereby the gasified elements are analyzed by the mass spectrometer to determine an element of C, S and N to an accuracy of 0.1 ppm, and a feedback circulating system for recirculating the gasified elements from the exhaust conduit to the combustion member until all of the elements in the sample are gasified.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennet (US Patent no. 3,305,318, submitted in the Information Disclosure Statement filed on July 24, 2003) in view of Oi et al (US Patent no. 4,332,591, also submitted in the Information Disclosure Statement filed on July 24, 2003).

Bennet teaches a system for analyzing elements in a steel sample comprising a combustion member (i.e. induction or high-frequency furnace 42), a source of oxygen gas 12 connected to the furnace to supply oxygen gas to the furnace, and an exhaust channel 54. Bennet also teaches the use of a thermal conductivity detector 34, whereby the gasified elements are analyzed quantitatively to determine an amount of carbon in the steel sample. Further, Bennet teaches a dust filter unit 46, a dehumidifier unit 52, an oxidizing device 50 and a sampling section means 56, 58 that are connected to the furnace by the exhaust conduit. The sampling section comprises valves 56, 58 that have an outlet to the atmosphere, thereby selectively connecting the exhaust channel to the detector 34. The filter, dehumidifier, oxidizing device and sampling section are all operatively connected upstream of the detector. Bennet fails to teach the specific use of a mass spectrometer to determine the amount of elements present in the sample.

Oi et al teach of an analytical method and apparatus for the determination of elemental gas in a fluid sample. Oi et al disclose an inert gas source 1 coupled to an electric furnace 7, wherein a test sample to be analyzed is injected into a reaction tube 5 and gaseous products are produced. Then, the gaseous products pass through a dehumidifier 9 and into a reaction tube 10, which is packed with an oxidizing agent, i.e. copper oxide or cobalt oxide (see Figure 2 in Oi et al). Lastly, the gas is introduced into the mass spectrometer 14. The mass spectrometer utilizes

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an electron impact type ion source to ionize the gaseous elements prior to introduction to the mass spectrometer (see column 3, lines 16-22 in Oi et al). Oi et al disclose that methods using a non-dispersion infrared analyzer or thermal conductivity detector have drawbacks such as insufficient sensitivity when the sample to be analyzed has low elemental concentrations.

Based upon the combination of Bennet and Oi et al, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to replace the thermal conductivity detector in the system taught by Bennet with the mass spectrometer system disclosed by Oi et al in order to avoid the drawbacks associated with thermal conductivity detectors taught by Oi et al, and since Oi et al teach that a mass spectrometer can determine elements such as nitrogen in a sample stably and with high-sensitivity (see column 2, lines 4-9 in Oi et al).

Oi et al disclose the use of a mass spectrometer, however is silent regarding the specific magnitude of sensitivity of the instrument. It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize a mass spectrometer to determine at least an element of C, S or N to an accuracy of 0.1 ppm since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Claims 27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (US Patent no. 4,332,770, submitted in the Information Disclosure Statement filed on July 24, 2003) in view of Oi et al. (US Patent no. 4,332,591, also submitted in the Information Disclosure Statement filed on July 24, 2003). For a teaching of Oi et al, see previous paragraphs in this Office action.

Ishida et al teach a system for analyzing elements in a steel sample comprising a heating member comprising a combustion or resistance furnace 3', a source of oxygen gas 1' connected to the combustion furnace to supply oxygen gas to the furnace, and an exhaust channel. See figures 1-3 in Ishida et al. Ishida et al also teach the use of a non-dispersive infrared analyzer 9' whereby the gasified elements are analyzed quantitatively to determine the amount of carbon dioxide in the steel sample. Further, Ishida et al teach a dust filter unit 4', a dehumidifier unit 5', an oxidizing device 7' and a sampling section means, i.e. flow regulator 6', which are connected to the furnace by the exhaust conduit. The sampling section means comprises a valve 6', thereby selectively connecting the exhaust channel to the non-dispersive infrared analyzer 9'. The filter, dehumidifier, oxidizing device and sampling section means are all operatively connected upstream of the analyzer 9' (see column 1, lines 18-50 in Ishida et al). Ishida et al fail to teach the specific use of a mass spectrometer to determine the amount of elements present in the sample. However, the use of a mass spectrometer is considered conventional in the analyzer art, see Oi et al.

Based upon the combination of Ishida et al and Oi et al, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to replace the non-dispersive infrared detector in the apparatus taught by Ishida et al with the mass spectrometer disclosed by Oi et al in order to avoid the drawbacks associated with non-dispersive infrared detectors taught by Oi et al, and since Oi et al teach that a mass spectrometer can determine elements such as nitrogen in a sample stably and with high-sensitivity (see column 2, lines 4-9 in Oi et al).

Oi et al disclose the use of a mass spectrometer, however is silent regarding the specific magnitude of sensitivity of the instrument. It would have been obvious to one of ordinary skill in

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the art at the time of the instant invention to utilize a mass spectrometer to determine at least an element of C, S or N to an accuracy of 0.1 ppm since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Please make note of: Ragaglia et al who teach of a process and device for elemental analysis.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen M. Wallenhorst whose telephone number is 571-272-1266. The examiner can normally be reached on Monday-Wednesday from 6:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden, can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maureen M. Wallenhorst
Primary Examiner
Art Unit 1743

mmw

February 14, 2005

Maureen M. Wallenhorst
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